

In a recent number of *The Victorian Naturalist*<sup>2</sup> Mr. F. G. A. Barnard has written interestingly of *Botrychium australe* R. Br., under the title "The Story of a Meadow Moonwort," giving an account of the cultivation of a plant of this rare Australian species for a period of forty years. Several individuals were discovered on an excursion of the Field Naturalists' Club of Victoria in September, 1887, as duly chronicled at the time, the plant under discussion being one of these. It was at once planted in a five-inch pot, and has since maintained itself perfectly in the half-shade of a lath fernery. On two or three occasions it has been repotted, but more frequently, as required, only the surface soil has been renewed. "As regularly as clockwork," writes the author, it puts forth its new frond the second week in February, and this lasts until December, when it turns yellow, withers, and dies. The frondless resting period is thus very short; but this, the writer suggests, is probably owing to the unusual amount of shade and moisture furnished it. "In the open its growing period would probably be shorter and its resting period longer, and this is likely to be the reason why it is apparently so rare."

Can any of our readers match this account of *Botrychium* as a potted plant?—WILLIAM R. MAXON.

THE HARDINESS OF HARDY FERNS.—In the spring of 1927 I had occasion to study the effect of late frosts on the first fronds that appear on some of our hardy ferns. It is surprising to see the difference in resistance in such as *Dryopteris*, *Osmunda*, *Athyrium*, and *Adiantum*.

Early in April spring-like weather set in, which started many of the ferns. The last of the month we had three nights when the thermometer dropped several

<sup>2</sup> 44: 197-199. 1927.

degrees below 30 and the ground froze. I have twenty-three varieties of ferns growing in a garden near the house. Those on which the frost seemed to have no effect were the two bladder ferns, the maiden-hair, and the royal fern. *Osmunda regalis*, eighteen inches high with fronds nearly spread open, and *Adiantum pedatum*, with tender-looking fronds just unrolling, paid no attention to the cold. *Athyrium angustum* had many fronds open and about one-third of them were killed. *Athyrium thelypteroides* was still under the ground. So were *Dryopteris Goldiana* and *D. Thelypteris*. But the ones which suffered most were those hardy *Polystichums* and *Dryopteris*. I have a fine plant of *Polystichum Braunii* which I obtained from Mrs. Somerville, of Superior, Wisconsin. Last year it put up four fronds, but this year it was sending up eleven fronds. I thought of course that, coming from the north, it would not be affected in the least. How surprised I was to see the frost had killed all but three fronds and two of those were damaged! The one least damaged was the one not yet unrolled. *Polystichum acrostichoides* was served about the same way. *Dryopteris spinulosa* with *intermedia* was just coming through the ground. Some of the plants were a little farther advanced and suffered for their early rising, as all that were above ground were killed. *D. marginalis* was just emerging from its leafy bed and those fronds farthest advanced were killed. *Phegopteris hexagonoptera* had sent three fronds up, two of which were nearly developed; these were not affected, but one just unrolling was killed. *Osmunda Claytoniana* had about one-third of its fronds frozen.

The *Polystichums* produced more fronds during the summer; so did the *Dryopteris*, with the exception of *D. marginalis*, which did not seem to recover fully and produce as many fronds as usual.

This test seemed to prove that those ferns which are apparently most tender and are the first to succumb to early fall frosts, will while in their young state resist hard freezing. But those hardy *Polystichums* and *Dryopteris* which remain green through the winter are very tender in their early stage of development.—E. W. GRAVES, *Bentonsport, Iowa*.

A REPORT OF THE IOWA BOTRYCHIUMS.—In 1927 I reported through the *FERN JOURNAL* finding a colony of thirty-one plants of *Botrychium dissectum* also a colony of forty-eight *B. obliquum* about two miles apart.

During the summer and fall of this past year I have explored many of the wooded creek-bottom lands, hoping I might locate other colonies. Although I have spent considerable time searching the surrounding country for miles, I have been unsuccessful in finding any more plants. It seems very queer that I should find a good-sized colony of both ferns within a month's time, and since have spent days carefully exploring similar places, yet failed to reveal a single plant. It indicates to me that the *Botrychiums* are rare in Van Buren County.

I have kept a close tab on the two colonies the past year, and I find *B. dissectum* has made an increase in numbers while *B. obliquum* has decreased. August 20th I counted forty-five plants of *B. dissectum*, an increase of fourteen over the year before. Twenty-three of the plants were large enough to show plainly they belonged to the *B. dissectum* group. The remaining twenty-two were small plants. Perhaps a dozen or more had come from spores this year, as one plant had produced a fruiting spike and had cast its spores the fall before.

The plants in the colony of *B. obliquum* were counted August 20th and I could find only thirty-one plants, or seventeen plants less than last year. As I had dug up